

# PATENT ABSTRACTS OF JAPAN

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## (54) DISPLAY DEVICE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To obtain a control function of the display state that is easily controlled by a CPU with improved operability and also to decrease the number of necessary cables by controlling the display state of a display part based on the contents which are designated by a display control signal.

**SOLUTION:** A display control part 30 generates the contents to be shown on a display device 20 by the instruction given from a CPU of a basic processor 10 and then outputs a display signal 31. In the same way, a display control part 40 outputs a display control signal 41 to control the display state of the device 20. Both signals 31 and 41 are once composed at a composition part 50 and outputted as a composite signal 51. The signal 51 is sent to the device 20 and then separated again into the signals 31 and 41 through a separation part 60. The signal 31 is inputted to a display part 80 for display of various information which are designated by the CPU. A control

part 70 outputs a control signal 71 to the part 80 based on the contents designated by the signal 41. The part 80 controls various display states based on the signal 71.

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#### CLAIMS

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[Claim(s)]

[Claim 1] A display-control means to control the contents displayed on a display with the directions from CPU, The display adjustment device which adjusts the display condition of said display with the directions from said CPU, A synthetic means to compound the status signal outputted from said display-control means, and the display adjustment signal outputted from said display adjustment device, A separation means to divide into the original signal again the signal outputted from this synthetic means, The display characterized by coming to have the display which displays the contents directed by the status signal outputted from this separation means, and the adjustment device which adjusts the display condition of said display according to the contents directed by the display adjustment signal outputted from said separation means.

[Claim 2] The display according to claim 1 with which said synthetic means is characterized by inserting and transmitting said display adjustment signal to the period which does not include the contents of a display among said status signals.

[Claim 3] In the control system of the display which receives a status signal from the

processor side containing CPU at least through a transmission medium A display-control means to control the contents displayed on said display at said processor side, The display adjustment device which outputs a display adjustment signal for the directions from said CPU to adjust the display condition of said display, The status signal outputted from said display-control means, and the display adjustment signal outputted from said display adjustment device, It compounds, and has a synthetic means to output and said display receives the composite signal transmitted through said transmission medium from said synthetic means by the side of said processor. Again While displaying the contents directed by said status signal which is equipped with a separation means to separate into an original status signal and an original display adjustment signal, and is outputted from said separation means by the display The control system of the display characterized by coming to have the adjustment device which adjusts the display condition of said display according to the contents directed by said display adjustment signal outputted from said separation means.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] Especially this invention relates to the control system of a display unit about the indicating equipment of information processors, such as a computer.

[0002]

[Description of the Prior Art] An example of the configuration of this kind of conventional display is shown in drawing 2.

[0003] With reference to drawing 2, this conventional equipment is had and constituted and sets a basic processing unit 10 and a display 20 to a basic processing unit 10. Have the display and control section 30 which controls the contents displayed to a display 20 with the directions from CPU (un-illustrating) connected through the host bus 11, and it sets to a display 20. The display 80 which displays the contents directed by the status signal 31 outputted from a display and control section 30, It has the controller 70 which outputs the display adjustment signal 71 for adjusting the display condition of a display 80, and the switch 90 for generating the indication signal 91 which directs the contents of adjustment to a controller 70. In the basis of such a configuration, and the conventional indicating equipment, the location of a display of display units, such as CRT, brightness, contrast, etc. were adjusted by the change of a switch 90.

[0004] moreover, as another example of a configuration of the conventional display As

shown in drawing 3 , it is had and constituted and a basic processing unit 10 and a display 20 are set to a basic processing unit 10. With the directions from CPU (un-illustrating) connected through the host bus 11 The display and control section 30 which controls the contents displayed on a display 20, and the display controller 40 which outputs the display adjustment signal 41 for the directions from CPU to adjust the display condition of a display. The display 80 which displays the contents directed in the preparation and the display 20 by the status signal 31 outputted from a display and control section 30, It has the controller 70 which adjusts the display condition of a display 80 according to the contents directed by the display adjustment signal 41 outputted from the display controller 40.

[0005]

[Problem(s) to be Solved by the Invention] The above-mentioned conventional equipment has the trouble of the following publication.

[0006] (1) The 1st trouble is that operability is not good in the conventional technique shown in drawing 2 .

[0007] The reason is based on what to operate and (90 of drawing 2 ) adjust a switch, a knob, etc. which were mounted in the indicating equipment 20 in adjustment of a display condition is needed for in the conventional equipment shown in drawing 2 .

[0008] (2) As the 2nd trouble, although software control of the control of a display condition can be carried out from the CPU side in the conventional technique shown in drawing 3 , it is that the cable number for control signal transmission increases.

[0009] The reason is because it is necessary to send the signal 31 for a display, and the signal 41 for adjustment to a display 20 by another cable in equipment like drawing 3 .

[0010] Therefore, this invention is to offer the display which it was made in view of the above-mentioned trouble, and the purpose realized the function of adjustment of the display condition by the control from CPU which was simple and improved operability, and reduced the cable number required for transmission of a signal.

[0011]

[Means for Solving the Problem] In order to attain said purpose the display of this invention A display-control means to control the contents displayed on a display with the directions from CPU, The display adjustment device which adjusts the display condition of a display with the directions from said CPU, A synthetic means to compound the status signal outputted from said display-control means, and the display adjustment signal outputted from said display adjustment device, A separation means to divide into the original signal again the signal outputted from this synthetic means, It is characterized by coming to have the display which displays the contents directed by the status signal outputted from this separation means, and the adjustment device which adjusts the display condition of said display according to the contents directed by the display adjustment signal outputted from said separation means.

[0012] In this invention, said synthetic means is characterized by inserting and transmitting said display adjustment signal to the period which does not include the contents of a display among said status signals.

[0013]

[Embodiment of the Invention] The gestalt of operation of this invention is explained below. In this invention, in the gestalt of that desirable operation, a display (20 of drawing 1) sends a transmission medium from a basic processing unit (10 of drawing 1). At least a status signal reception and this basic processing unit The display and control section which controls the contents displayed on a display with the directions from CPU (30 of drawing 1), The display controller which adjusts the display condition of a display by software control by CPU (40 of drawing 1), The synthetic section which compounds the status signal (31 of drawing 1) outputted from a display and control section, and the display adjustment signal (41 of drawing 1) outputted from a display controller, and is outputted to transmission media (51 of drawing 1), such as a cable, (50), The separation section which a preparation and a display (20 of drawing 1) receive the signal transmitted through a transmission medium from the synthetic section (50 of drawing 1) of a basic processing unit, and is again divided into the original signal (60 of drawing 1), It has the display (80 of drawing 1) which displays the contents directed by the status signal outputted from the separation section, and the controller (70 of drawing 1) which adjusts the display condition of said display according to the contents directed by the display adjustment signal outputted from the separation section, and is constituted.

[0014] Thus, in the gestalt of operation of this invention, the synthetic section (50 of drawing 1) compounds the status signal outputted from a display and control section, and the display adjustment signal outputted from a display controller, and since the compound signal is used for transmission between a basic processing unit (10 of drawing 1), and a display (20 of drawing 1), the number of a signal can be reduced.

[0015] Moreover, each information is not spoiled by the status signal's having the intermittent part which is not transmitting original information on the property of displays, such as CRT, and inserting a display adjustment signal between them in the gestalt of operation of this invention.

[0016]

[Example] Next, the example of this invention is explained to a detail with reference to a drawing.

[0017] Drawing 1 is drawing showing the configuration of one example of this invention. This example will be equipped with a basic processing unit 10 and a display 20 if drawing 1 is referred to. A basic processing unit 10 The display and control section 30 which generates the contents which should be displayed on a display 20 with the directions from CPU, and outputs a status signal 31, The display controller 40 which outputs the display adjustment signal 41 in order to control the display condition of a display 20 by the directions from CPU, It has the synthetic section 50

which compounds a status signal 31 and the display adjustment signal 41. A display 20 has the separation section 60 which separates the output signal 51 of the synthetic section 50, the display 80 which considers the status signal 31 separated in the separation section 60 as an input, and the controller 70 which considers the display adjustment signal 41 separated in the separation section 60 as an input, and is constituted.

[0018] Next, actuation of one example of this invention is explained.

[0019] As a fundamental configuration, the basic processing unit 10 and the indicating equipment 20 are separated, and transmission (transfer of a signal) in the meantime is performed by the cable 51.

[0020] With the directions from CPU in a basic processing unit 10, a display and control section 30 generates the contents which should be displayed on a display 20, and a status signal 31 is outputted. Similarly, in order that the display controller 40 may control the display condition of a display 20 by the directions from CPU, the display adjustment signal 41 is outputted.

[0021] Here, a display condition shows brightness, contrast, a display position, a display size, a tint, etc., when a display 80 is CRT (Cathode Ray Tube).

[0022] A status signal 31 and the display adjustment signal 41 are once compounded by the synthetic section 50, and are outputted as a composite signal 51. Since the period which does not include the information on the contents of a display is periodically shown in a status signal 31 on the property of the displays 80, such as CRT, at this time (for example, perpendicular blanking period etc.), the display adjustment signal 41 is inserted between that intestinal stasis in the synthetic section 50, and, for this reason, the signal itself, transmission speed, etc. are not spoiled.

[0023] The composite signal 51 sent to the indicating equipment 20 by the cable 51 is again separated into a status signal 31 and the display adjustment signal 41 from a basic processing unit 10 in the separation section 60.

[0024] A status signal 31 is inputted into a display 80, and various information by which CPU directions were carried out is displayed.

[0025] A controller 71 outputs the adjustment signal 71 to a display 80 based on the contents directed by the display adjustment signal 41. A display 80 adjusts various display conditions based on the adjustment signal 71.

[0026]

[Effect of the Invention] As explained above, according to this invention, the effectiveness of the following publication is done so.

[0027] (1) It is that adjustment of displays, such as CRT, can perform the 1st effectiveness of this invention simply by software control from CPU.

[0028] The reason is because it had the display controller for controlling adjustment of a display by program instruction from CPUs, such as a switch, in this invention.

[0029] (2) Although the 2nd effectiveness of this invention is carrying out software processing of the adjustment of a display by CPU in a basic processing unit, it is not

increasing the signal cable between a basic processing unit and an indicating equipment.

[0030] That reason depends the separation section which is equipped with the synthetic section which once compounds the status signal which transmits the contents of a display, and the display adjustment signal which transmits adjustment directions of a display condition, and divides this transmitted composite signal into a status signal and a display adjustment signal again on having had in this invention.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the configuration of one example of this invention.

[Drawing 2] It is the block diagram showing an example of the configuration of the conventional technique.

[Drawing 3] It is the block diagram showing an example of another configuration of the conventional technique.

[Description of Notations]

10 Basic Processing Unit

11 Host Bus

20 Display

30 Display and Control Section

31 Status Signal

40 Display Controller

41 Display Adjustment Signal

50 Synthetic Section

51 Composite Signal

60 Separation Section

70 Controller

71 Adjustment Signal

80 Display

90 Switch

91 Indication Signal

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